

REMARKS

Claims 1 through 20 were originally submitted for examination. In a previous communication involving a restriction requirement, Applicants elected to prosecute claims 1 through 8. By the present Office Action, Examiner Loney rejected the claims as either being anticipated by Mackinnon or being obvious over Mackinnon in combination with other cited prior art.

I. Claim Rejections - Anticipated By Mackinnon

The Examiner rejected claims 1, 2, 5, 7 and 8 under 35 U.S.C. §102(b) as being anticipated by Mackinnon. The Examiner stated that Mackinnon discloses a polypropylene board that contains elliptical hollow sections formed from arcuate ribs that interconnect the top and bottom surfaces of the board. He further stated that the interconnecting ribs also contain gas pockets.

In response, the Applicants respectfully submit that the present invention, as now claimed, is not anticipated by Mackinnon. Newly presented claim 21 includes a feature of the gas pockets being small bubbled (i.e. closed) cells that form foam ribbed layers. The Applicants submit that no new matter

has been added. The gas pockets being small bubbled cells is disclosed in the specification on page 17, lines 15 through 18.

The ribs being foamed is disclosed on page 6, lines 17 and 18.

In contrast to small closed cells of the present invention, the gas pockets of the Mackinnon patent are elongated voids, long cylinders or flutes (col. 1, lines 25 through 32 and col. 2, lines 59 through 63). The voids run in parallel from one end of the sheet material to the other.

Furthermore, the sheet material of Mackinnon is rigid or semi-rigid. It does not have foamed ribs, which are claimed in the present invention.

Furthermore, the Mackinnon patent discloses pockets that correspond to the configuration of the extrusion die. (col. 2, lines 59-63). The number of the elongated voids is limited to what is determined by the extrusion. In contrast to this, the gas pockets of the present invention are generated from a chemical reaction of foaming agent in which numerous and random closed cells are created.

Moreover, a limitation of the Mackinnon patent is overcome by the present invention. The sheet in the Mackinnon patent does not provide a smooth surface since the ribs (18) shrink due to thermal contraction and the crystallization of the thermoplastic material. In contrast to this, the present invention overcomes the shrinkage by the expansion of the numerous closed foam cells in the ribs.

Thus, for all of the above reasons, the Applicants respectfully submit that claims 21, 22, 25, 27 and 28 are not anticipated by Mackinnon. Therefore, the Mackinnon patent should be removed as a reference.

II. Claim Rejections - 35 U.S.C. §103
Mackinnon in view of Sheridan

The Examiner rejected claims 3 and 4 under 35 U.S.C. §103(a) as being unpatentable over Mackinnon in view of Sheridan. Examiner Loney stated that Mackinnon teaches the invention substantially as recited except for the trapezoidal and rectangular passageways. He further stated that Sheridan discloses a hollow panel also wherein the passageways formed by interconnecting ribs can be rectangular or trapezoidal. He concluded it would have been obvious to one of ordinary skill in the art at the time the Applicants' invention was made to have modified the Mackinnon device to have rectangular or trapezoidal passageways by altering the orientation of the ribs, as taught by Sheridan, which would impart different structural properties to the board as supplied by the angle ribs.

In response, with regard to the Examiner's finding of obviousness, the Applicants reiterate the arguments submitted in regard to Mackinnon discussed in Section I herein above.

The Applicants further respectfully submit the combination with Sheridan fails to provide a prima facie case of obviousness for the following reasons. First, the art of Sheridan is different from the art of Mackinnon. Second, the device of Sheridan assumes a different structure from the present invention. Third, the Sheridan patent is not consistent with the applications of the present invention. And fourth, the combination of Mackinnon with Sheridan lacks motivation.

First, the art of Sheridan is different from the art of Mackinnon. The Sheridan patent discloses sheets in Figs. 4h and 4i which have soft and spongy surfaces, as for cushion applications (col. 1, lines 22 through 27). On the other hand, the Mackinnon disclosure relates to sheet material for packaging for food packaging, as well as panels for construction purposes (col. 4 lines 15 through 19). The sheet material of Mackinnon is rigid or semi-rigid. The Applicants respectfully submit that one skilled in the art of rigid or semi-rigid material for food packaging or construction support would not turn to the art of spongy material for cushions for information on how to construct ribs. The weight distribution of the two type sheets of rigid or semi-rigid material and spongy material is different. Thus, it would not be reasonable to use a teaching on ribs of the one type material for information of

constructing ribs on the other type material.

Second, the device of Sheridan assumes a different structure from the present invention. The sheet in the Sheridan patent is related to homogeneous foam with specific structure for a cushion application (col. 3, lines 66 through col. 4 line 4). In viewing Figs. 4h and 4i, it is obvious that the sheets are homogeneous foam sheets. In contrast to this, the sheet of the current invention is a heterogeneous sheet which has a rigid or semi-rigid top and bottom layers and foamed ribs in the middle section. Thus, the Sheridan patent is different art from the present invention, and the Applicants respectfully submit that the Sheridan patent should be removed as a reference.

Third, the Sheridan patent is not consistent with the applications of the present invention. As disclosed in the present invention specification on page 6, line 21 through page 7, line 3, the relatively smooth surfaces of the boards lend itself in particular to printing and graphic arts applications. In contrast to this, the Sheridan disclosure involves surfaces which are soft and spongy being used for cushion applications. The Sheridan invention relates to a cushion material with a predetermined internal structure to achieve desired compression properties (col. 1, lines 22 through 27). Thus, the claimed smooth surfaces of the present invention board which provide for a printing or

graphic arts application do not exist in the Sheridan patent. Furthermore, the limitation of the Mackinnon disclosure of not having foamed ribs is not overcome by the Sheridan patent.

In addition, for graphic arts applications, the surface of plastic materials, such as polyolefin material in the present invention, generally needs surface treatment in order to have good affinity to printing ink. A very popular practice is treating the surface of the plastics with corona. The homogeneous foam sheet can not be corona treated since the plastic material will burn. A feature of the solid top and bottom layers are critical requirements in the present invention for treating the surfaces.

And fourth, there is no motivation to combine the art of Mackinnon with the art of Sheridan. The Mackinnon patent relates to packaging art while the Sheridan patent relates to sound cushioning art. The object of the two arts is different. The packaging art is concerned with making the board stable and secure for a load. Cushioning art is concerned with creating soft and spongy surfaces. They are two entirely different arts. The Applicant respectfully submits that one skilled in the art of packaging would not turn to the art of cushioning for information on how to form ribs.

III. Claim Rejection - 35 U.S.C. §103
Mackinnon in view of Giraudeau

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Mackinnon in view of Giraudeau. Examiner Loney stated that Mackinnon teaches the invention substantially as recited except for the U-shaped ribs. He further stated that Giraudeau teaches to connect planar face sheets using a somewhat U-shaped rib. He concluded it would have been obvious to one of ordinary skill in the art at the time the Applicants' invention was made to have modified the Mackinnon to form the ribs as U-shaped ribs, as taught by Giraudeau, in and or to impart the desired strength and/or physical properties that the U-shaped ribs would create in the board since Mackinnon teaches to form ribs in the board for these reasons.

In response, with regard to the Examiner's finding of obviousness, the Applicants reiterate the arguments submitted in regard to Mackinnon discussed in Section I herein above. The Applicants further respectfully submit the combination with Giraudeau fails to provide a prima facie case of obviousness for the following reasons. First, the Giraudeau patent is different art from the present invention. Second, the U-shaped ribs of Giraudeau are different from the U-shaped ribs of the present invention. And third, there is no motivation to combine the art of Mackinnon with the art of

Giraudeau.

First, the Giraudeau patent is different art from the present invention. The sheet in the Giraudeau patent is made by putting together at least two components (col. 1, lines 35 through 41). In contrast, the present invention, as claimed is integrally extruded. Thus, the Giraudeau patent is different art from the present invention.

Second, the U-shaped ribs of Giraudeau are different from the U-shaped ribs of the present invention. Figures 1 and 4 of the Giraudeau patent disclose an approximate U-shaped rib. In contrast to this, the U-shaped ribs of the present invention as disclosed by Fig. 8 show a U with another upside down U immediate below the U. Thus, the U-shaped rib of Giraudeau is different from the present invention U-shaped rib.

Third, there is no motivation to combine the art of Mackinnon with the art of Giraudeau. The Mackinnon patent relates to packaging art while the Giraudeau patent relates to sound insulation art. The object of the two arts is different. The packaging art is concerned with making the board stable and secure for a load. Sound insulation is concerned with absorbing noise. They are two entirely different arts. The Applicant respectfully submits that one skilled in the art of packaging would not turn to the art of sound insulation for information on how to form ribs.

IV. Hara Patent

In contrast to the present invention integrally extruded sheet, the sheet in the Hara patent is a laminated sheet. Moreover, as shown in Fig. 1A of the Hara patent, the sheet does not have a corrugated structure as is disclosed in the present invention. Furthermore, the sheet in the Hara patent is an individually pressed molded part in contrast to a continuously extruded sheet of the present invention (col. 3, line 60 through col. 4, line 21 of Hara).

CONCLUSION

In view of the above amendments to the claims, and further in view of the above remarks, all of the claims are believed to be allowable and an early and favorable response is earnestly solicited.

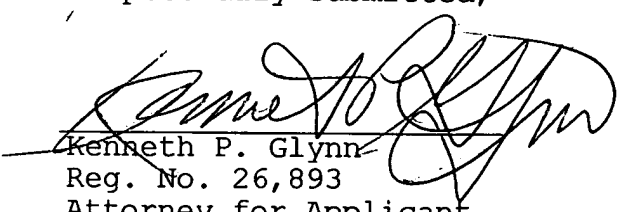
Thank you.

Respectfully submitted,

Dated: 3 December 2003

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